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Identification of a new fibroblast growth factor receptor, FGFR5.

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A novel fibroblast growth factor receptor (FGFR), designated FGFR5, was identified from an EST database of a murine lymph node stromal cell cDNA library. The EST has approximately 32% identity to the extracellular domain of FGFR1-4. Library screening with this EST identified two full-length alternative transcripts which we designated as FGFR5 beta and FGFR5 gamma. The main difference between these transcripts is that FGFR5 beta contains three extracellular Ig domains whereas FGFR5 gamma contains only two. A unique feature of FGFR5 is that it does not contain an intracellular tyrosine kinase domain. Predictive structural modelling of the extracellular domain of FGFR5 gamma suggested that it was a member of the I-set subgroup of the Ig-superfamily, consistent with the known FGFRs. Northern analysis of mouse and human FGFR5 showed detectable mRNA in a broad range of tissues, including kidney, brain and lung. Genomic sequencing identified four introns but identified no alternative transcripts containing a tyrosine kinase domain. Extracellular regions of FGFR5 beta and 5 gamma were cloned in-frame with the Fc fragment of human IgG(1) to generate recombinant non-membrane bound protein. Recombinant FGFR5 beta Fc and R5 gamma Fc demonstrated specific binding to the ligand FGF-2, but not FGF-7 or EGF. However, biological data suggest that FGF-2 binding to these proteins is with lower affinity than its cognate receptor FGFR2C. The above data indicate that this receptor should be considered as the fifth member of the FGFR family.

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